

Lakeland Irrigation Scheme - Update September 2021



An Australian Government Initiative



How We Got Here

- ☐ 2015 - Lakeland irrigators sought improved water reliability and increased volumes
- ☐ Early 2016 – application through Cape York Sustainable Futures to Commonwealth Government for a Grant
- ☐ Early 2017 – Commonwealth Grant for \$850,000 to CYSF

☐ Objectives

- Area of Irrigable land in the Lakeland Area
- How much water is required
- What sources are available



Expression of Interest – Feasibility Component

National Water Infrastructure Development Fund

Section A: General information

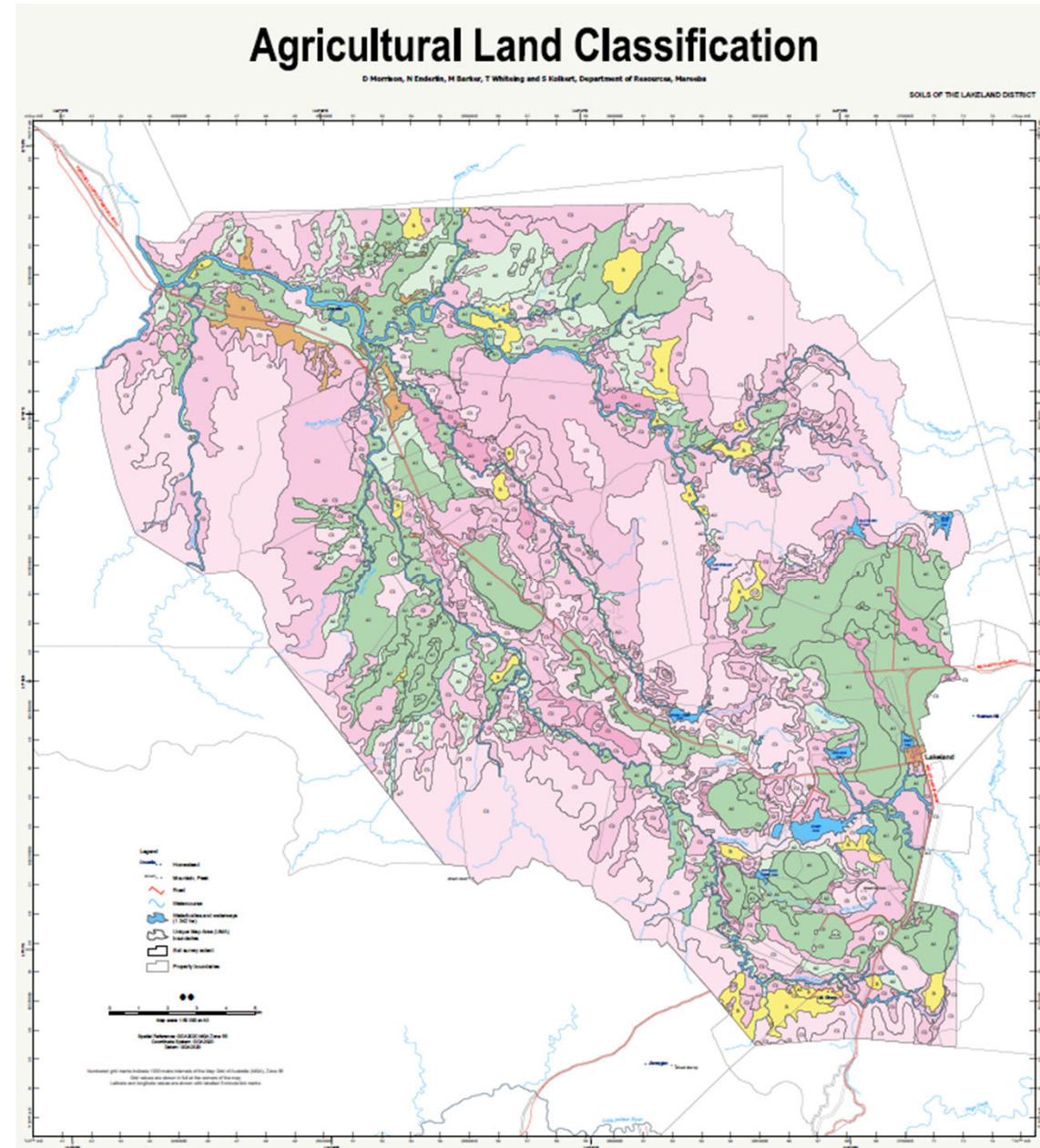
Purpose of this form	To apply for funding under the Feasibility Component of the National Water Infrastructure Development Fund ('the fund').
Before applying	Read the Feasibility Component Guidelines Ensure you meet the eligibility requirements at section C of this form.
To complete this form	Electronically You can complete this form electronically, using Microsoft Word. Please remember to print it out and sign before submitting. Manually Use black or blue pen Print in BLOCK LETTERS Mark boxes with a tick or a cross
Your application must include	<input checked="" type="checkbox"/> a completed and signed application form <input checked="" type="checkbox"/> all attachments listed at question 9
Email your application	waterinfrastructure@agriculture.gov.au
Please note altered forms will not be accepted	

Strategic Business Case Scope

- Need for Scheme
- Land and Soil availability and suitability
- Water Sources and preferred scheme to meet demand
- Technical Feasibility of preferred option
- Native Title (Desk Top)
- Cultural Heritage (Desk Top)
- Environment (Desk Top)
- Stakeholder engagement
- Economic Analysis, Benefit/Cost
- Feasibility Design Drawings
- Risk
- Next steps

Soil and Land Classification

- ❑ DNRME investigated an area of 58,442Ha
 - Concluded a total of 17,586Ha suitable for irrigation (Class A & B)
 - 8,000Ha of freehold Class A on the Red Tableland already cleared
- ❑ Water requirement based on an industry average of 10ML per Ha was 80,000ML



Water Sources

5 sources of water investigated

- ❑ Additional and augmented **on-farm dams** which currently service 935.5Ha with an additional 438.5Ha from groundwater sources.

This investigation showed that this option would increase current reliability from 50% to 70% but would not sustain significant increases in irrigated land area

- ❑ **East Normanby River** – Discounted due to:

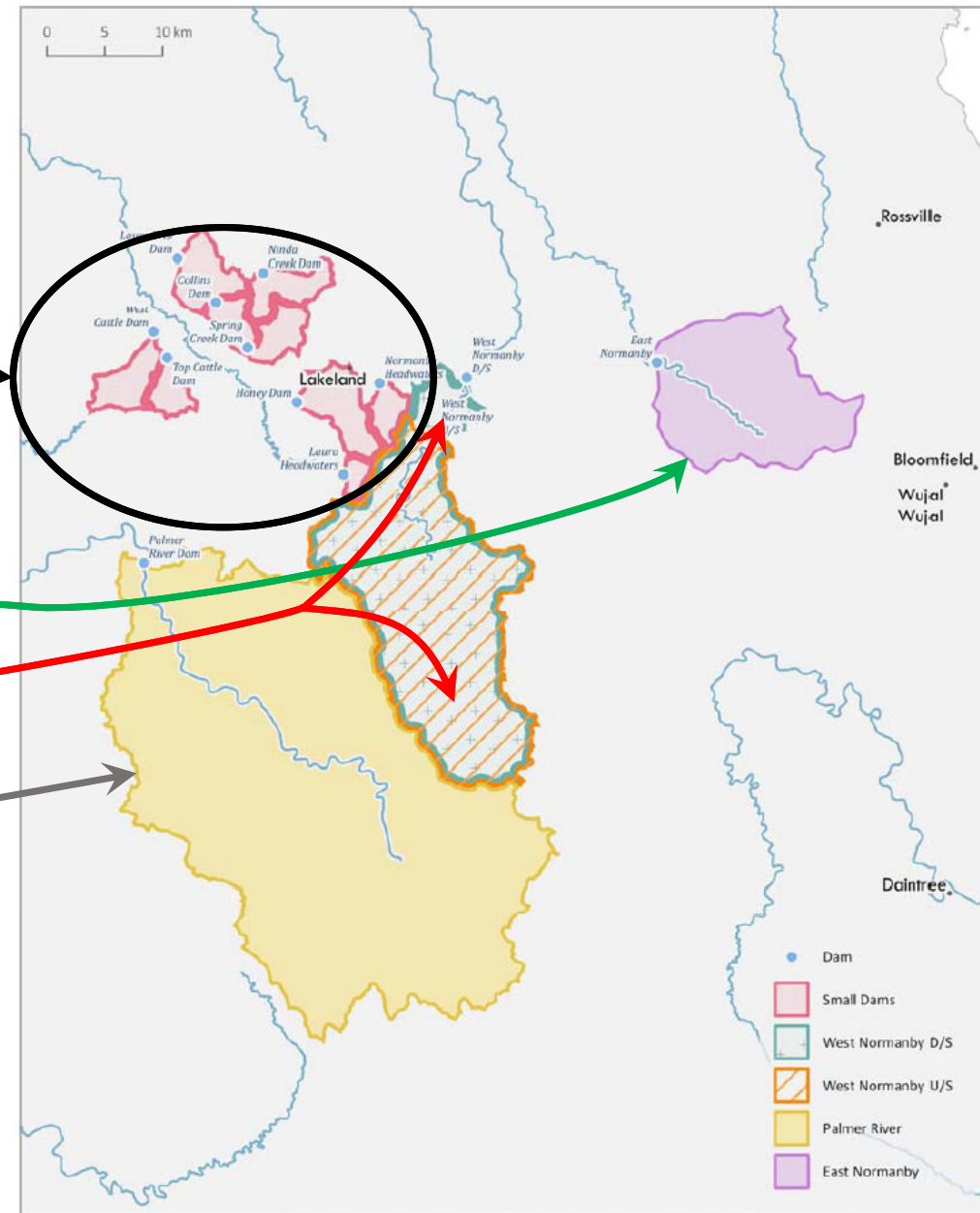
- inclusion in National Park,
- Distance from Lakeland,
- Small catchment
- High pumping costs
- Discharge to Great Barrier Reef

- ❑ **West Normanby River** – 2 sites:

- Small catchment would require capture of annual runoff to meet demand
- High pumping costs
- Discharge to Great Barrier Reef

- ❑ **Palmer River** – 17km downstream from Roadhouse. This option had been identified previously by local farmers:

- Large catchment ~900km²
- Large inundation volume ~200,000ML
- Not in Great Barrier Reef catchment
- Needs a transfer of water allocation from the Mitchell river system to the Normanby/Laura system



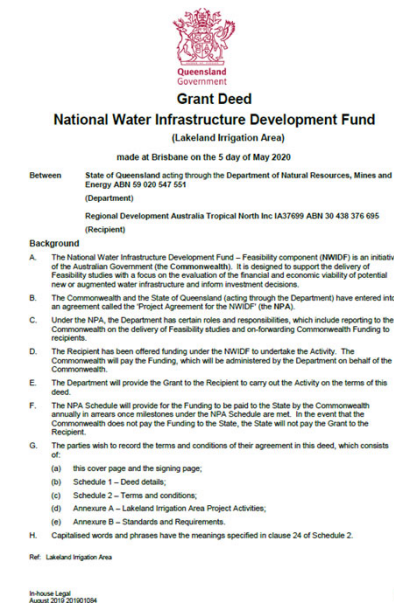
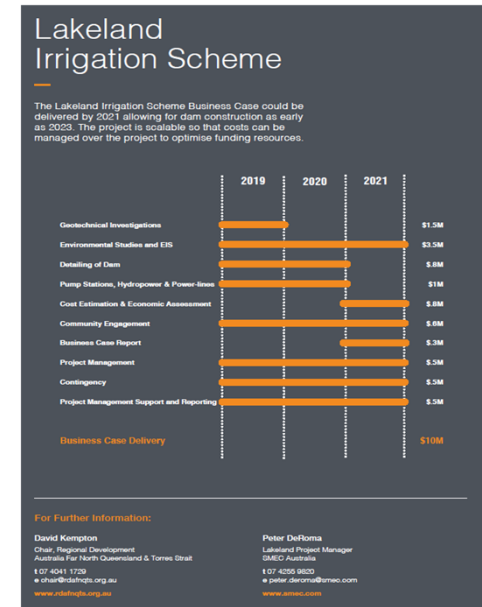
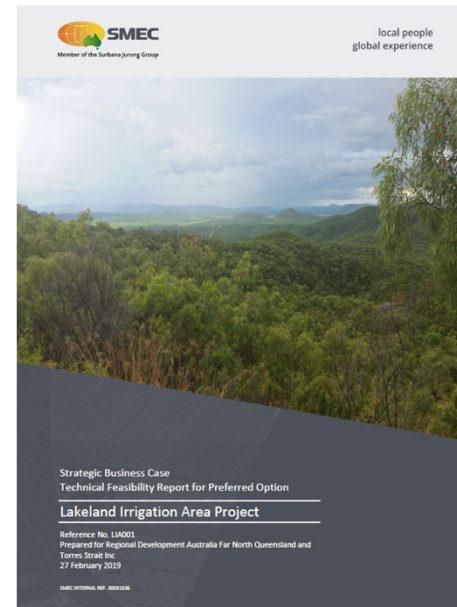
Lakeland Irrigation Scheme – Feasibility Outcomes

1. The service need was established for additional irrigable land and a new water source to service this area
2. Part of the Preliminary Business Case was completed by identifying a solution and conducting a Feasibility Analysis on the preferred option
- **Palmer River Dam**
3. A cost estimate for delivery of a Detailed Business Case was developed, and a potential program of tasks prepared.
4. Prepared a submission to the Commonwealth Government for the next stage – a Detailed Business Case.

Outcome

- ❑ Feb 2019 – Strategic Business Case (SBC) and Feasibility of the Palmer Option released by RDA
- ❑ Mid to late 2019 – application by RDATN Commonwealth Government for a Grant to undertake a Detailed Business Case (DBC) for the Palmer River Option
- ❑ May 2020 – Commonwealth Grant for \$10M to progress the DBC to RDATN
- ❑ Objectives:

- A. Provide an acceptable Price per ML for growers
- B. Prepare a Reference Design for a Dam, transfer system and reticulation to meet Objective A
- C. Investigate all technical as well as cultural, social, environment and economic aspects.
- D. Investigate Funding, Ownership and Operating models

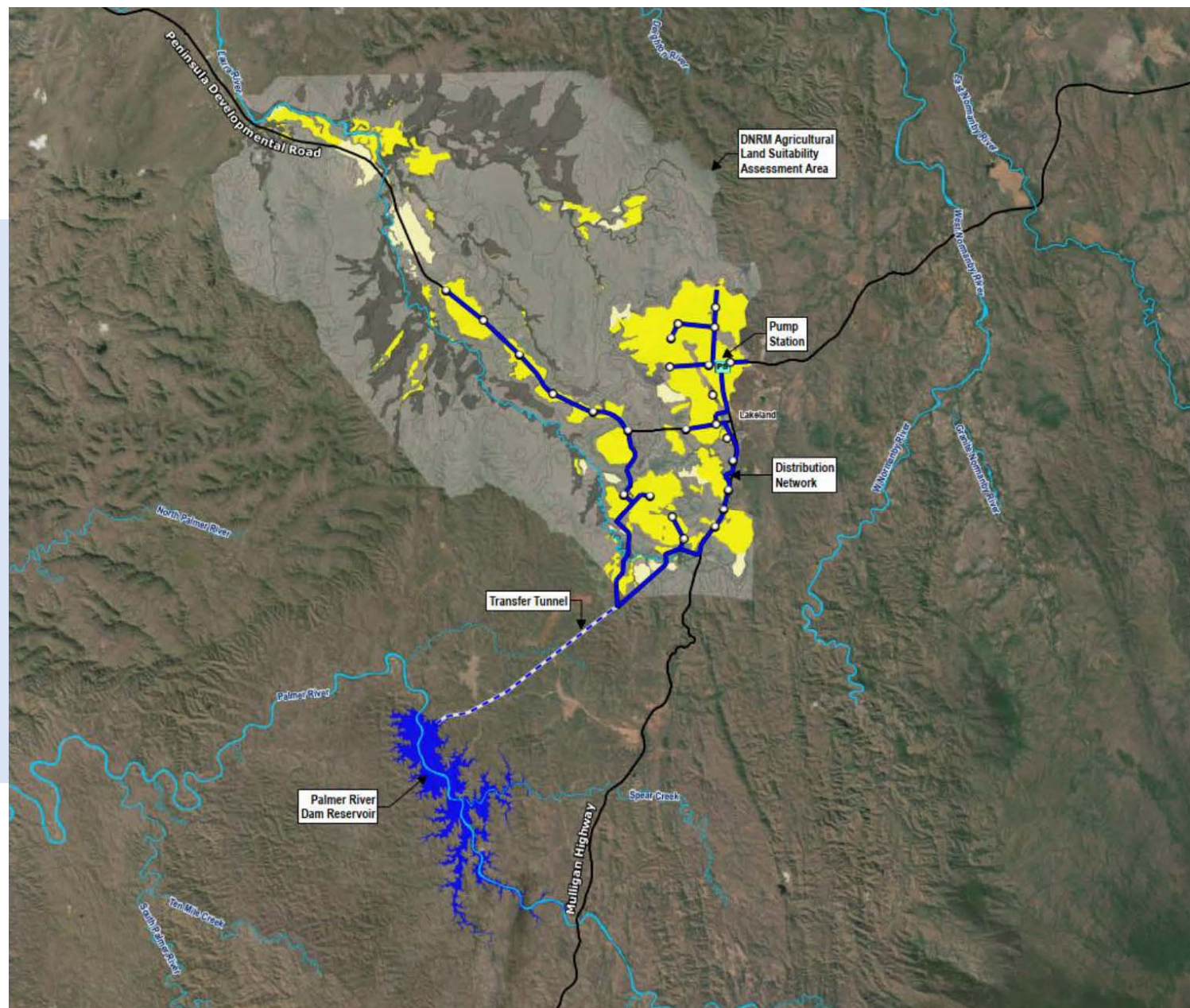


Lakeland Irrigation Scheme

Extent and Configuration (Sept 2021)

3 Components:

1. Dam
2. Transfer from dam to Lakeland
3. Reticulation to farms



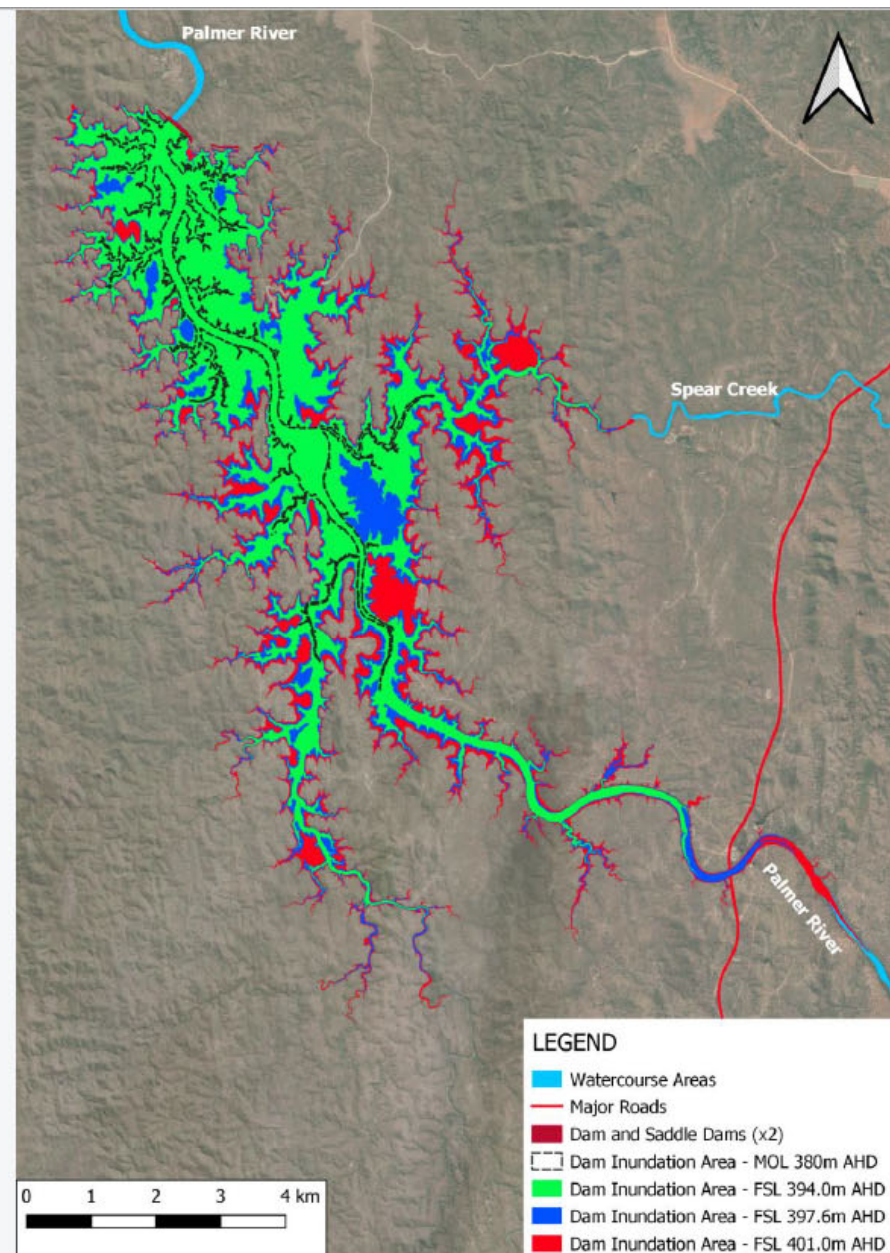
Dam Size and Inundation Area

Preferred Dam Size

Design Feature	Value
Lowest River Channel Level	360 mAHD
Full Supply Level	397.6 mAHD
Dam Crest Level	410 mAHD
Dam Height	50 m
Storage Capacity at FSL	205,000 ML
Inundation Area at FSL	2,328 Ha

Other Dam Sizes Considered

FSL (mAHD)	Storage Capacity (ML)	Inundation Area (Ha)
394	133,000	1,686
397	191,000	2,211
397.6	205,000	2,328
398.6	229,000	2,529
399.3	247,000	2,676
401	296,000	3,048



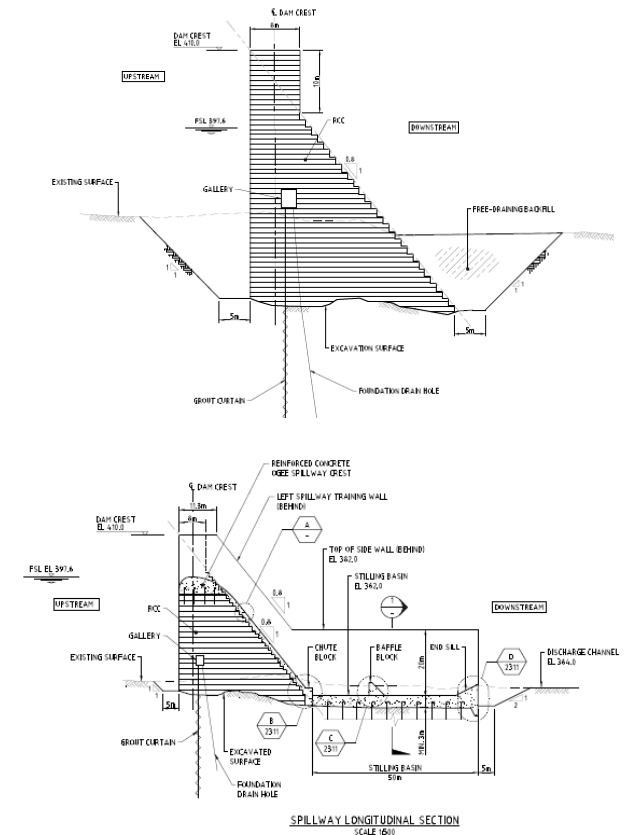
Lakeland Irrigation Scheme – Progress on Palmer Option

- Review of the Strategic Business Case for suitability
- Most field work has been completed:
 - Geotechnical drilling on preferred dam location including cultural heritage clearance for access
 - Dry and Wet season environmental data collection
 - Preliminary dam options for sizing
 - Decision taken to transfer water from the dam to the Lakeland distribution system by tunnel to avoid having to pump to the top of the Dividing Range
 - Consideration of hydro electricity from the escarpment to the valley
 - Options for a distribution network of pipes to service land.
- Preliminary Social Impact study
- Stakeholder engagement commenced including community, indigenous and irrigators
- Extensive topographical survey (aerial and drone) for dam and Lakeland
- Preliminary agriculture/agronomy confirmation
- Water resource modelling and assessment
- Economic assessment and reporting commenced
- Preliminary assessment of fishway provision

Lakeland Irrigation Scheme – Progress on Palmer Option

- Current outcomes include:
 - Preferred dam type is Roller Compacted Concrete
 - Preliminary scheme costings
 - Review of distribution network for efficiency
 - Standalone power supply not supported
 - 50% Reference Design complete
 - Current project will not service areas outside the currently cleared areas on the 'red tableland' but will investigate water security to all of the irrigable land (which includes Crocodile Station).

This is currently viewed as a range of sizes of storage based on the current dam location but with the dam level at increased elevation. A further alternative could exist within the preferred dam size depending on uptake of water and water usage rates.



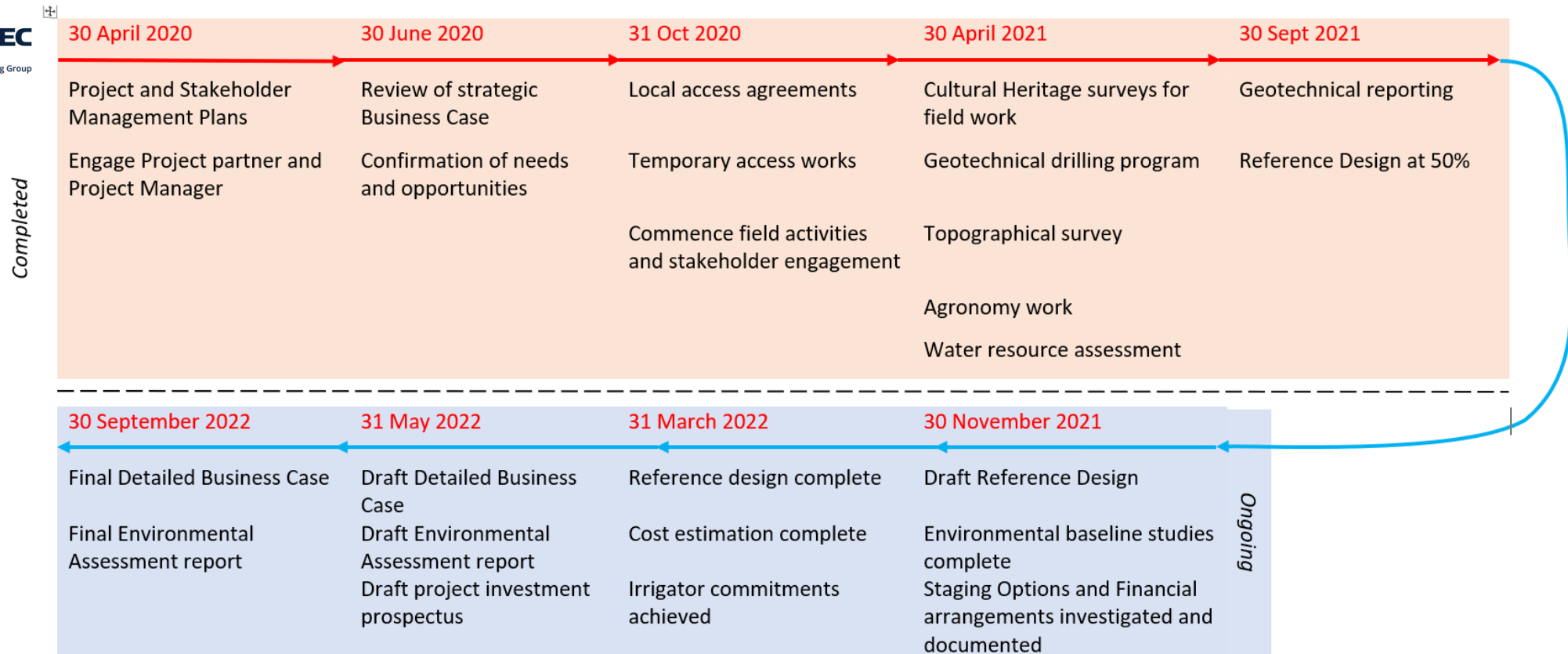
Lakeland Irrigation Scheme – Progress on Palmer Option

- On-going work includes:
 - Geotechnical interpretive reporting
 - Milestone 5 report delivered in mid September – Includes detailed geological assessment.
 - Catchment hydrology and scheme reliability
 - Dam and flood hydrology
 - Regional flood assessment
 - Palmer River bridge flood impact assessment from higher dam elevations
 - Failure Impact Assessment
 - Multi Criteria Assessment of scheme options
 - Geotechnical investigations for construction materials and transfer tunnel
 - Source based catchment modelling to assess changes in pollutant loads for the Mitchell and Normanby catchments
 - Environmental Impact Assessment

Lakeland Irrigation Scheme – Issues still to be addressed

- Water allocation including cross catchment from Mitchell to Normanby and any impacts on downstream users in the Palmer or Mitchell areas
- Potential benefits by supplementing flows in the Laura River from reduced Farm runoff (currently stored in on-farm dams)
- Improvements in agricultural irrigation practices as a positive impact on the Great Barrier Reef
- Social benefits of increasing agriculture at Lakeland including:
 - Population increase
 - Additional community, social and health services
 - Opportunities for service centre for Lower Cape York Peninsula
 - Indigenous engagement and opportunities e.g. near the dam, and Crocodile
- Scheme funding and sponsorship (Fed, State, local)
- RDATN will seek a Coordinated Project under the Coordinator General

Lakeland Irrigation Scheme – Milestones



Scheme for Reference Design

